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(71) Applicant
Anthony William Beekwilder,
96 Beechboro Road, Bayswater, Western Australia,
Australia

(72) Inventor
Anthony William Beekwilder

(74) Agent and/or Address for Service
G. F. Redfern & Co.,
Marlborough Lodge, 14 Farncombe Road, Worthing,
West Sussex BN11 2BT

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GB 0204125
GB 0152246
GB 0143415

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E1D

(54) Brick cleaning apparatus

(57) The apparatus comprises conveyor means, to transport bricks along paths defined by guide feet (28), and toothed rollers (20, 22), to contact the surfaces of the bricks and crush the mortar thereon. Scraper blades may also be provided.

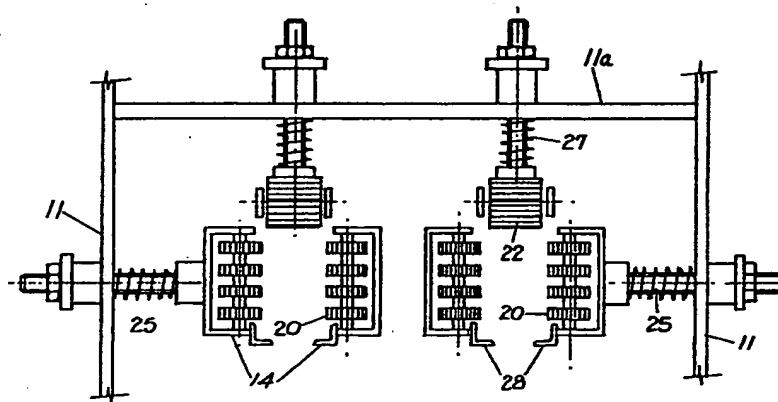
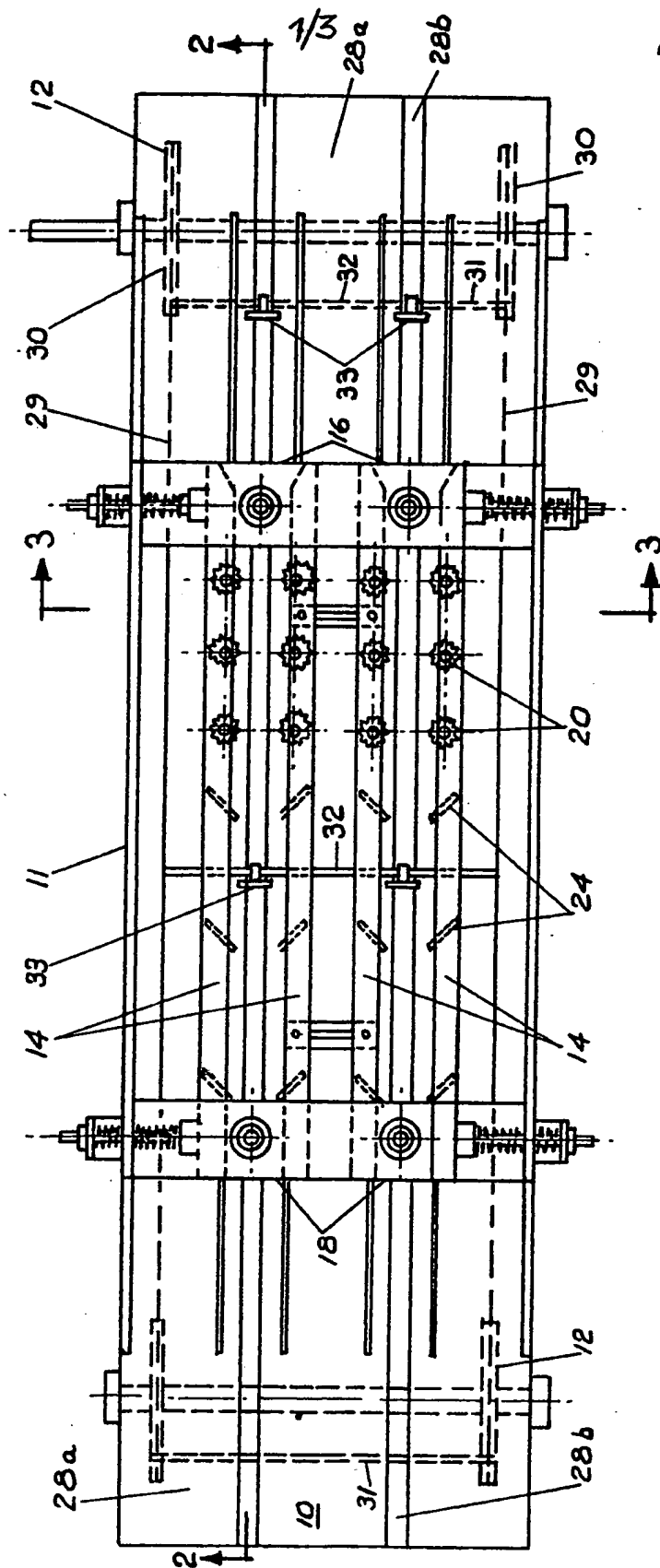


FIGURE 3

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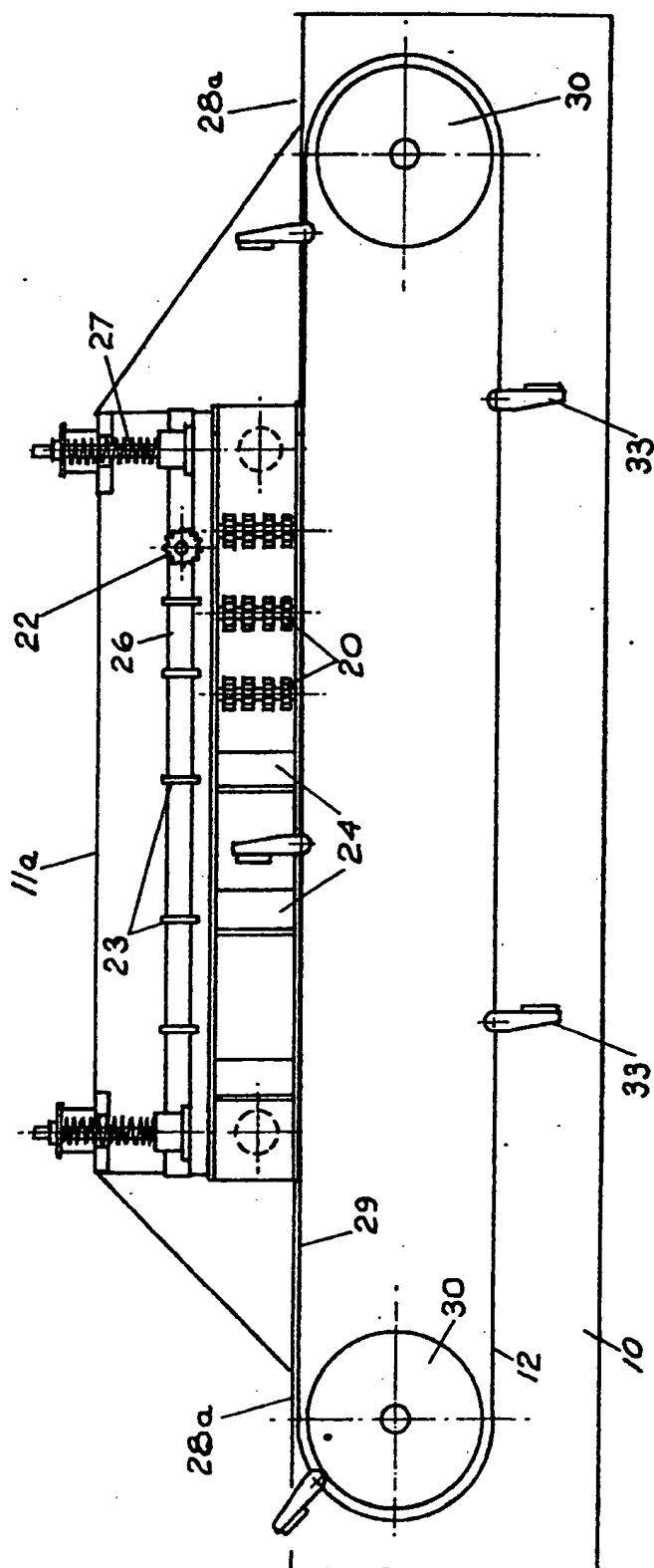
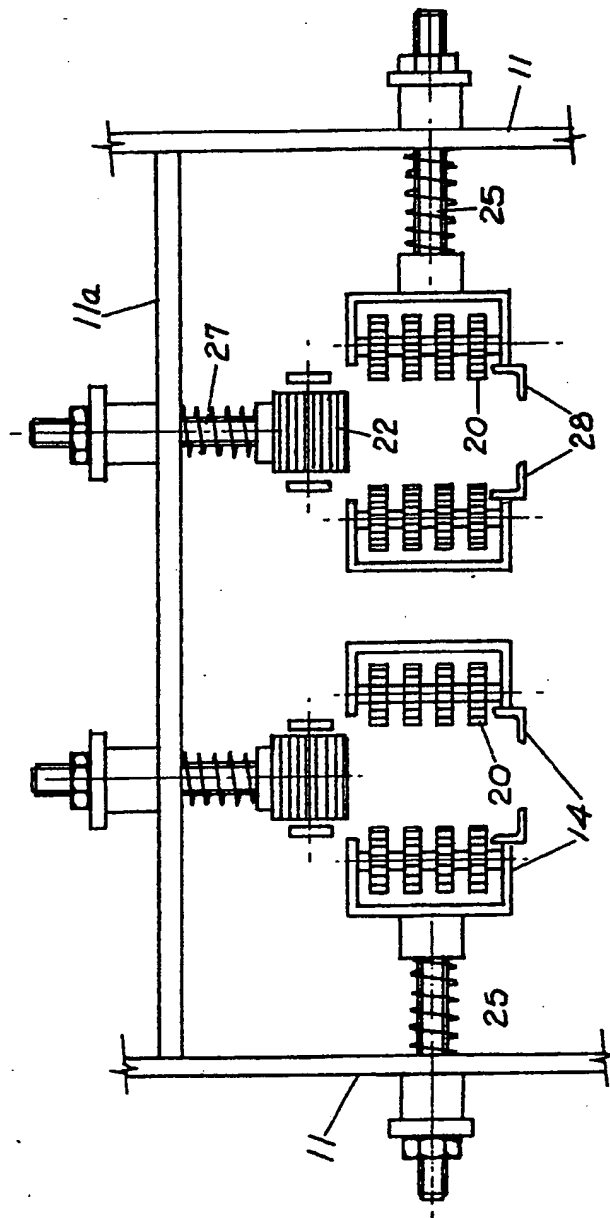


FIGURE 2



SPECIFICATION

Brick cleaning apparatus

5 The present invention relates to cleaning of bricks. When buildings constructed wholly or partially of bricks are demolished a large quantity of bricks is obtained. These bricks can be re-used such as for internal walls, external walls or brick paving but, prior to such use, have to be cleaned to remove mortar or cement from the brick faces. The present invention provides an apparatus for cleaning bricks in which mortar or cement can be removed from brick faces to render the bricks suitable for re-use.

10 In accordance with the present invention there is provided a brick cleaning apparatus comprising conveyor means arranged to transport bricks to be cleaned along a cleaning path through a cleaning station, said cleaning station including at least one roller having a curved surface arranged to contact a brick face during transport of a brick through the cleaning station and to crush mortar or cement or the like on the brick face.

For clarity, the term "mortar" will be used to include cement or any other crushable material which may be found on brick faces following demolition of a building.

Preferably, downstream of the roller there is a blade means for removing residual material from the said contacted face of the brick.

The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a brick cleaning apparatus in accordance with the present invention with a roof portion and parts depending therefrom removed.

Figure 2 is a sectional elevation along the line 2-2 of *Figure 1* of the apparatus of *Figure 1*;

Figure 3 is a partial cross-sectional view along the line 3-3 of *figure 1* with a conveyor means removed.

In *Figures 1* to *3*, there is shown a brick cleaning apparatus a housing 10 with comprising side panels 11 and a roof 11a having mounted therein a conveyor means 12 arranged to transport bricks along a pair of parallel cleaning paths between respective pairs of side members 14. The paths between the side members 14 each have an inlet end 16 and an outlet end 18 and the part of the apparatus between each inlet 16 and outlet 18 defines a cleaning station. Each side member 14 provides a mounting for a plurality of upright rollers 20 arranged in opposed pairs to clean faces of bricks transported by the conveyor means 12. In addition, as can be seen in *Figures 2* and *3*, there is provided at least one suitably supported upper roller 22 which is horizontally disposed and arranged to clean upper faces of bricks transported by the conveyor 12. The curved faces of the rollers 20 and 22 are preferably not smooth and may be provided with circumferential rows of teeth, longitudinal ribs or the like.

Downstream of the rollers 20 and 22 the side members 14 provide mountings for a plurality of

blades 24 preferably arranged in opposed pairs and angled towards the direction of travel of the bricks, that is, they have trailing edge in the cleaning path which in use contacts brick faces. In addition, there are provided further blades 23 mounted above the conveying path of the bricks (see *Figure 2*). As can best be seen in *Figure 3*, one side member 14 of each pair is spring biased towards the cleaning path so that the gap between opposed pairs of rollers 20 and blades 24 is less than the width of bricks to be cleaned. As shown, the outer one of each side member 14 is connected to a rod 25 which slidably projects through an aperture in an adjacent side panel 11. A coil spring is mounted on the rod 25 between the side panel 11 and the side member 14. The coil spring urges the side member away from the side panel 11. Similarly, the upper roller 22 and the upper blades 23 are mounted on a structure 26 which depends downwardly from the roof 11a of the apparatus on rods 27. The rods 27 slidably project through apertures in the roof 11a. Between the roof 11a and the structure 26 a coil spring is mounted about each rod 27. Thus, the upper roller 22 and the upper blades 23 are spring biased downwardly towards the cleaning path and are spaced therefrom by a distance less than the height of bricks to be cleaned. As can be seen in *Figure 3*, each side member 14 has an inwardly projecting foot 28 such that the gap between the inner ends of opposed feet 28 is typically less than the width of bricks to be transported through the apparatus. Prior to the inlet 16 and subsequently to the outlet 18 the apparatus comprises a floor 28a containing only gaps 28b for brick transporter fingers to be described.

The conveyor means 12 may include a pair of endless chains 29 extending over respective pairs of conveyor wheels 30. A plurality of spaced brick transporters 31 are mounted between the chains 29. Each brick transporter 31 includes a bar 32 extending between the chains 29. Conveniently, the brick transporter bars 32 are connected as links into the chains 29.

A pair of spaced fingers 33 project outwardly from each bar 32. Each finger 33 is so located to travel between the feet 28 of the pair of side members 14 when in the upper run of the chains 29, while the bars 32 travel below the feet 28.

In use, the conveyor means 12 is set in motion. Rows of bricks are placed adjacent the inlet 16 and these rows of bricks are pushed along the cleaning path by the fingers 33 through the inlet 16 into the cleaning station. As bricks reach the rollers 20 opposed pairs of the rollers 20 move apart relative to one another against spring bias. Similarly, the roller 22 is pushed upwardly against spring bias. The frictional engagement of the bricks against the rollers 20 and 22 causes the latter to rotate the crushed mortar on the contacted brick faces. The crushed material falls away from the bricks under the influence of gravity. Subsequently, the bricks reach the blades 24 and opposed pairs of the blades 24 move apart relative to one another against spring bias. Similarly, the blades 23 are pushed upwardly against spring bias. The blades

23 and 24 remove any residual material from the brick faces. The bricks continue onto the outlet end 18 and there leave the cleaning station. They are deposited on the adjacent region of the floor 28a.

5 It is found that bricks cleaned in the apparatus of the present invention can be re-used such as for the construction of internal walls or external walls in buildings or for brick paving.

10 Modifications and variations such as would be apparent to a skilled addressee are deemed within the scope of the present invention.

CLAIMS

15 1. A brick cleaning apparatus comprising conveyor means arranged to transport bricks to be cleaned along a cleaning path through a cleaning station, said cleaning station including at least one roller having a curved surface arranged to contact
20 a brick face during transport of a brick through the cleaning station and remove mortar and cement or the like on the brick face.

2. A brick cleaning apparatus according to claim 1, which comprises at least one pair of opposed rollers disposed on either side of the cleaning path and which are spaced apart by an amount less than that of bricks to be cleaned, at least one roller of said pair being movable away from the other roller of the pair to enable a brick to be
30 transported along the cleaning path between the opposed rollers.

3. A brick cleaning apparatus according to claim 1 or 2, in which at least one roller is provided above the cleaning path at a height less than
35 that of a brick to be cleaned, said roller being movable away from the conveying means to enable a brick to be cleaned to be transported along the cleaning path between the rollers.

4. A brick cleaning apparatus according to claim 2 or 3, in which the movable roller is spring biased.

5. A brick cleaning apparatus according to any one of the preceding claims, in which the or each roller comprises a curved, cleaning surface which
45 is not smooth.

6. A brick cleaning apparatus according to any one of the preceding claims, in which there is provided a blade means downstream of the roller means, said blade means being arranged to remove residual material from faces of a brick which have previously been contacted by a curved surface of a roller.

7. A brick cleaning apparatus according to claim 6, in which there is provided at least one pair
55 of opposed blades disposed on either side of the cleaning path and which are spaced apart by an amount less than the width of bricks to be cleaned, at least one blade of each pair being movable away from the other blade of the pair to enable a
60 brick to be transported along the cleaning path between the opposed blades.

8. A brick cleaning apparatus according to claim 6 or 7, in which at least one blade is provided above the cleaning path at a height less than that
65 of a brick to be cleaned, said blade being movable

away from the conveying means to enable a brick to be transported along the cleaning path beneath said blade.

9. A brick cleaning apparatus according to claims 7 and 8, in which the or each movable blade is spring biased.

10. A brick cleaning apparatus according to any one of claims 6 to 9, in which the or each blade is angled towards the direction of travel of the bricks
75 so as to have a trailing edge contacting the bricks.

11. A brick cleaning apparatus according to any one of the preceding claims, in which the conveying means comprises an endless member having mounted thereon a plurality of spaced fingers arranged to travel along the cleaning path and to push bricks therealong.

12. A brick cleaning apparatus according to claim 11, in which the conveyor means comprises at least one endless chain.

13. A brick cleaning apparatus according to claim 12, in which the conveyor means comprises a pair of spaced chains having a plurality of spaced bars connected thereacross, said bars having said fingers mounted thereon.

14. A brick cleaning apparatus substantially as hereinbefore described with reference to the accompanying drawings.

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